

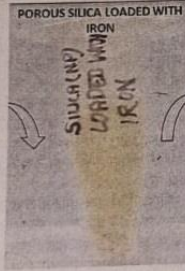
भास्कर खास • इंस्टीट्यूट ऑफ नैनो साइंस एंड टेक्नोलॉजी ने तैयार किया आयरन का नैनो फर्टिलाइजर, हॉर्टिकल्चर से जुड़ी फसलों पर ट्रायल सफल

सब्जियों और फलों में मिल सकेगा ज्यादा आयरन कंटेंट

ननु जीगिंदर सिंह | चंडीगढ़

कॉम्प्रीहेंसिव नेशनल न्यूट्रीशियन सर्वे (सीएनएनएस) के अनुसार पंजाब में 50.9 फीसदी बच्चों में आयरन की कमी है। भारत में करीब 600 मिलियन लोग इससे प्रभावित हैं

और सप्लीमेंट्स के बावजूद आयरन डेफिशियेंसी और इसकी वजह से खून की कमी जैसी समस्याएं कंट्रोल में नहीं हैं। ऐसी ही समस्याओं को ध्यान में रखते हुए सेक्टर-81 स्थित इंस्टीट्यूट ऑफ नैनो साइंस एंड टेक्नोलॉजी ने आयरन का नैनो फर्टिलाइजर तैयार किया है। इसका टमाटर की फसल पर ट्रायल कामयाब रहा है। इसका पेटेंट भी फाइल कर दिया गया है। इसका



उपयोग सभी फलों और सब्जियों पर किया जा सकता है। इंस्टीट्यूट की ओर से टेक्नोलॉजी ट्रांसफर की प्रक्रिया शुरू है। तकनीक ट्रांसफर होने के बाद ये नैनो फर्टिलाइजर आम धागवानों को

• इसलिए है जरूरत...

76% महिलाएं एनिमिक हैं चंडीगढ़ में, नेशनल फेमिली हेल्थ सर्वे की रिपोर्ट के मुताबिक

58.2% आबादी हरियाणा, 50 फीसदी आबादी पंजाब में आयरन की कमी

• 94018 लाख रुपये अप्रुव किए गए हैं एनिमिया मुक्त भारत प्रोग्राम के लिए (वर्ष 2020-21)

• 1970 में शुरू हुआ था नेशनल न्यूट्रीशियनल एनिमिया प्रोफिलेक्स प्रोग्राम, अभी भी आयरन डेफिशियेंसी की समस्या जस की तस है

मिल सकेगा। डॉ. पीएस विजय कुमार, पुलिकत और मौनिका सिंह ने इसको तैयार किया है। इस नैनो फर्टिलाइजर के जरिए सब्जी-फल में मौजूद आयरन की मात्रा 10 से 15 फीसदी बढ़ जाएगी।

• नया मटीरियल ऑक्सीडाइज्ड फॉर्म में नहीं बदलेगा, फसल को ज्यादा आयरन मिलेगा

डॉ. विजय बताते हैं- आयरन की कमी खास तौर पर ब्रिक्स देशों- ब्राजील, रशिया, इंडिया, चाइना, साउथ अफ्रीका के लिए ये सबसे बड़ा चैलेंज है क्योंकि वह यूरोप की तरह महंगे फर्टिलाइजर्स और टेक्नोलॉजी इस्तेमाल नहीं कर सकते।

यही वजह है कि आयरन फोर्टिफाइड करने और ज्यादा आयरन कंटेंट वाले पौधे तैयार करने सहित कई चीजों पर काम हो रहा है। लेकिन किसी भी तरीके से पूरी कामयाबी नहीं मिली है।

खाद के तौर पर भी इसका उपयोग हो सकता है लेकिन इसमें दिक्कत ये आती है कि आयरन सल्फेट को डालते ही ये ऑक्सीडाइज्ड फॉर्म में बदल जाता है। इसके बाद पौधा इसको अपने अंदर समाहित नहीं कर पाता।

हमने इसमें बदलाव करते

हुए इसमें फील्ड नैनो पोरस मटीरियल तैयार किया है जिससे ये ऑक्सीडाइज्ड फॉर्म में नहीं बदलेगा और फसल को आयरन मिल सकेगा। इससे भूमि के सख्त होने की संभावना भी नहीं रहेगी। इस नैनो आयरन फर्टिलाइजर को खास तौर पर सब्जियों, फलों और दालों के लिए तैयार किया है। फिलहाल गेहूं और धान पर ये काम नहीं करेगा। अंगूर पर भी इसका कामयाब पाया गया है। ये सिलिका से बनाया गया है।

ये होगा फायदा...

इस समय आयरन की कमी एक गंभीर समस्या है, खासतौर पर गर्भ धारण करने वाली महिलाओं और बच्चों में। ये आंकड़ा हर स्टेट में 54 फीसदी से 75 फीसदी तक है। यदि फलों, सब्जियों और दालों में भी आयरन का कंटेंट बढ़ेगा तो उनको सप्लीमेंट कम देने पड़ेगा।



Published Date:	25 May 2022	Publication:	The Hindu [Kochi]
Journalist:	Mini Muringatheri	Page No:	4

Money spider discovered at Wayanad Wildlife Sanctuary

Christ College researchers also find ant-mimicking spider species named *Toxeus alboclavus*

MINI MURINGATHERI
THRISSUR

Money spiders, commonly found in European meadows, have been reported for the first time in the country from the Muthanga range of the Wayanad Wildlife Sanctuary.

The species is called so as it is "believed to bring luck" to the person who comes in contact with it.

Researchers of Christ College, Irinjalakuda, Thrissur, have discovered the spider that belongs to the family of dwarf spiders (*Linyphiidae*) under the genus *Prosoponoides*. It has been given the name *Prosoponoides biflectogynus*.

Only 6 species identified
"Only six species of spiders belonging to this genus have been identified from across the world so far. It is the first report of this genus from India and hence no extensive studies have been conduct-



Male of the money spider (*Prosoponoides biflectogynus*) and female of the ant-mimicking spider (*Toxeus alboclavus*).

ed on this species of spiders in the country," said Dr. Sudhikumar A.V., Head, Department of Zoology, Christ College.

The research team includes Athira Jose and Vishnu Haridas, research scholars of the Centre for Animal Taxonomy and Ecology

(CATE), Christ College.

They have also discovered ant-mimicking spiders, belonging to the group of jumping spiders, from the Mananthavady range. They belong to the family of *Salticidae*.

The male and the female money spiders are typically

3 mm and 4 mm long respectively. Both sexes are dark brown and have irregular silver patches and black spots on elliptical abdomen. There are numerous fine black spines on their olive green legs. Eight dark eyes are arranged in two rows.

Triangular webs

Females build triangular webs in between dry tree twigs and feed on small insects, while males prefer to hide beneath dry leaves. Two or more male spiders can be found in the web of a single female.

The ant-mimicking spider has been named *Toxeus alboclavus*. Researchers collected this species of jumping spiders from among leaf litter.

"They perfectly mimic ants by lifting their front pair of legs while walking as a mechanism to escape from potential predators. Only three species of this genus have

been reported from India, and this is the first species reported from the Western Ghats," noted Dr. Sudhikumar.

The male and the female spiders of this species grow up to 4 mm and 6 mm long respectively.

A pair of white stripes on the dark brown abdomen of females makes them distinct from other spiders of this group. The male of the species are characterised by a brown cephalic region and black thorax with white hairs.

The forward-projecting fangs have a characteristic shape of an antler. Long spines are present on the base of each leg.

The study was funded by the Department of Science and Technology (DST) and the University Grants Commission (UGC). The findings were published in the British scientific journals *Peckhamia* and *Arachnology*.

'Expensive research infra to be made available in smaller cities'

OUR CORRESPONDENT

NEW DELHI: Researchers from smaller cities will soon be able to access expensive research infrastructure at state-funded institutions as the Centre has released guidelines for sharing such scientific equipment at a small cost.

While researchers from mofussil towns will get access to cutting-edge equipment, the Scientific Research Infrastructure Sharing Maintenance and Networks (SRIMAN) guidelines also seek to incentivise the institutions by rating them for the extent of participation in the initiative, which may have a bearing on the funds they receive in the future.

Releasing the guidelines recently, Science and Technology Minister Jitendra Singh noted that 90 per cent of the high-end research equipment is

imported and not shared among the research community.

The objective of the SRIMAN initiative is to "make publicly-funded scientific research infrastructure available as valuable public resource by providing better access and sharing for extensive and optimal use of the community".

The initiative also seeks to improve efficiency of public expenditure by sharing expensive and state-of-the-art publicly-funded research infrastructure.

"Scientific infrastructure is the foundation of research and innovation and facilitating its availability, accessibility and sharing needs to become a key goal, particularly for countries like India with limited resources," Singh said.

The initiative also seeks to promote the domestic instrumentation industry by encouraging universities and



Minister Jitendra Singh releases guidelines of the Scientific Research Infrastructure Sharing Maintenance and Networks (SRIMAN) FILE IMAGE

research-and-development institutions to set up start-ups to manufacture research instruments and also develop the workforce for its maintenance.

The guidelines make it clear that the discretionary authority to define exclusive and shareable infrastructure, along with

providing exceptions, will remain with the Department of Science and Technology (DST), except in the case of strategic departments, which will be the discretionary authorities for their own infrastructure.

The guidelines make it clear that individual researchers

Highlights

- × Objective of the SRIMAN initiative is to make scientific research infrastructure available as public resource
- × 90% of high-end research equipment is imported
- × Seeks to promote the domestic instrumentation industry by encouraging universities and research-and-development

availing the facility under the initiative will enjoy complete rights on intellectual property.

"Just by providing access and sharing research infrastructure, a grantee agency cannot claim IPR on the work done by individual researchers," the guidelines said.

Scientists report spotting of fossil of Madtsoiidae snake

PNS ■ NEW DELHI

Scientists from Wadia Institute of Himalayan Geology, Dehradun and a few other academic institutions including Panjab University Chandigarh and IIT, Ropar, have reported sighting of the fossil of a Madtsoiidae snake from the molasse deposits of Ladakh Himalaya for the first time indicating their prevalence in the subcontinent for much longer time than previously thought.

According to the scientists, Madtsoiidae is an extinct group of medium-sized to gigantic snakes, firstly appeared during the late Cretaceous and mostly distributed in the Gondwanan landmasses, although their Cenozoic record is extremely scarce.

From the fossil record, the whole group disappeared in the mid-Paleogene across most Gondwanan continents except for Australia where it survived with its last known taxon *Wonambi* till late Pleistocene.

The lucky team members included Dr. Ningthoujam Premjit Singh, Dr. Ramesh Kumar Sehgal, and Mr. Abhishek Pratap Singh from Wadia Institute of Himalayan Geology, Dehradun, India in association with Dr. Rajeev Patnaik and Mr. Wasim Abass Wazir from Panjab University Chandigarh; Dr. Navin Kumar and Piyush Uniyal from Indian Institute of Technology Ropar, and Dr. Andrej Cernansky of Comenius University Slovakia.



The occurrence of Madtsoiidae from the Oligocene of Ladakh indicates their continuity at least to the end of the Paleogene (geologic period and system that spans 43 million years from the end of the Cretaceous Period 66 million years ago). The research published in *Journal of Vertebrate Paleontology* shows that the members of this group were successful in this subcontinent for much longer time than previously thought.

The global climatic shifts and the prominent biotic reorganization across the Eocene-Oligocene boundary (which correlates to the European Grande Coupure), did not cause the extinction of this important group of snakes in India, said an official from the Science and Technology Ministry.

He said that the newly described specimen is housed in the repository of the Wadia Institute, an autonomous institute of the Department of Science and Technology.



Published Date:	12 May 2022	Publication:	The Times of India [Bangalore]
Journalist:	Chethan Kumar	Page No:	5

Alzheimer's: Delhi pharma firm gets B'luru scientists' drug IP

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Bengaluru: A Delhi-based pharma company has received the IP (intellectual property) of a path-breaking drug molecule for Alzheimer's disease that scientists at the Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR) in Bengaluru developed more than a year ago. The drug—TGR63—is designed to prevent the mechanism rendering neurons (brain cells) dysfunctional in Alzheimer's disease (AD), which has no known permanent cure.

Hamsa Biopharma will take the drug to trials through its parent company in the US, IGC Pharma.

Though available treatments provide temporary relief, there are no approved drugs that directly act on disease mechanisms of AD, which both JNCASR scientists and Hamsa believe TGR63 has the potential to do. Professor T Govindaraju and his team developed TGR63—reported first by TOI on February 26, 2021.

"We got in touch with Prof

The drug—TGR63—is designed to prevent the mechanism rendering neurons (brain cells) dysfunctional in Alzheimer's disease, which has no known permanent cure

Govindaraju after learning about the molecule, which we believe can be a game changer, in March-April 2021. We analysed the molecule, the study and findings and our experts found there to be potential," Ram Mukunda, CEO of IGC Pharma. Govindaraju reiterated how TGR63 holds potential to halt or cure the leading cause of dementia, explained that in the Alzheimer's brain, abnormal levels of naturally forming protein clump together to form plaques that collect between neurons and disrupt cell function.

"...This is caused by production and deposition of a protein called amyloid peptide (AD) that accumulates in the central nervous system. The multifactorial nature of AD has prevented research-

ers from developing effective treatment so far, but we now have a candidate which could reduce toxicity," he said.

JNCASR has already established—through lab and mice tests—that TGR63 can rescue neuronal cells from amyloid toxicity.

According to Mukunda, the firm will start testing the molecule for toxicity and absorption in primates. "Once we document all the data and show it is safe on primates, which is a process that should take about a year, we can proceed with Phase-I trials in humans. Here, we'd test the molecule for safety and tolerance in humans."

He said the firm will fast-track the test process and, in about 12 months or so, should be ready for seeking regulatory approval for Phase-I trials in humans. "Once approved, that process is expected to go on for another year, where we would essentially test for safety among different groups. While the initial tests will happen in India, we may have to shift it to the US, Canada or South America for trials in primates and humans," Mukunda said.

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Like CSR, SSR guidelines for scientists, will sway appraisal

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New Delhi: Every scientist in the country is expected to contribute at least 10 days in a year towards 'scientific social responsibility' (SSR) and such voluntary individual activities over and above routine works would be given due weightage in their annual performance appraisal.

This provision is part of SSR guidelines, released by the science ministry in tune with the spirit of corporate social responsibility (CSR), aimed to harness the potential of the scientific community in achieving social goals. "SSR is aimed at creating an effective ecosystem for optimum use of existing assets in order to empower the less endowed, marginalised and exploited sections of society by enhancing their capability, capacity and latent potential," said the 14-page guidelines, released on National Technology Day last Wednesday.

Under the guidelines,



The new guidelines have listed 17 broad activities which can be taken up to help bridge the gap between science and society

the ministry enlisted 17 broad activities which can be taken up by the scientists as part of their SSR to bridge the gap between science and society. It would be applicable for scientists working in public and private knowledge institutions (laboratories, institutes, universities, colleges and scientific institutions), central ministries, state governments, their departments and associated au-

tonomous agencies.

According to the guidelines, individual and institutional SSR activities would be adequately incentivised with necessary budgetary support. The SSR activities and projects of a knowledge institution would not be allowed to be outsourced or subcontracted. All central government ministries and state governments are required to plan and strategise their SSR in accordance with their respective mandates.

The enlisted illustrative SSR activities include lectures by scientists in schools and colleges on modular or full courses or on a theme for inspiring students to study science and take up a career in science; mentoring of school students in their innovation projects; organising visits to planetariums, laboratories, sciences centres and industries; skill development through training and workshops, and sharing of infrastructure and knowledge resources.

'Janitor' robots of three teams win two spots at ARTPARK contest

TIMES NEWS NETWORK

Bengaluru: AI & Robotics Technology Park (ARTPARK) at IISc has concluded its robotics challenge that required robots to demonstrate janitorial tasks that would be typically performed in a washroom. Of the 134 applications from across the country, four teams made it to the finals.

ARTPARK is established by IISc with support from the AI Foundry in a public-private collaborative model. It has a seed funding of Rs 170 crore from the department of science & technology (DST), GoI, under the national mission on interdisciplinary cyber-physical systems.

"The top four teams — Cerberus (IIIT-Hyderabad), Gryffindors (PSG



FOCUS ON SERVICE ROBOTICS

College of Technology, Coimbatore), Giga Robotics (NIT-Surathkal), and Robo Jyothians (Jyothi College of Engineering, Thrissur) — made it to

the finals. Gryffindor won the competition while Cerberus and Giga Robotics teams shared the runner-up spot," a statement read.

Gryffindors' robot using "the visual SLAM approach" could map the environment, go around the washroom in a 'lawn mower' pattern and gather waste of any size. The robot drops the waste in the trash can. It can also mop the floor, spray sanitiser on the countertop and dry the same. The robot from Giga Robotics could pick up trash from the floor, put it in the dustbin, mop the floor and also clean the wash basins and the countertop, while that from Cerberus was what's called "a scissor mechanism-based mobile manipulator".

Govt unveils rules for renting out scientific equipment

Bid To Promote Utilisation And Wider Access Of Key Instruments

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New Delhi: Intending to transform scientific instruments in government labs into lucrative assets, generating rental income and ensuring universal access of public-funded research infrastructure (RI) to stakeholders, the Centre has come out with guidelines that can promote efficient utilisation and wider access of such infrastructure and equipment to scientists, researchers and industry professionals across the country.

The guidelines — Scientific RI Sharing Maintenance and Networks (SRI-MAN) — suggest creation of a Cluster Central Instrumentation Facility (CCIF) which will tie up with industries, especially MSMEs and startups allowing ease of access



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ENHANCING QUALITY OF SCIENTIFIC OUTPUT

to the high-end infrastructural and informational resources for development, testing, standardisation, prototyping. The CCIF may be set up in public-private-partnership (PPP) mode with revenue sharing.

The guidelines, released by the department of science & technology (DST) on Na-

tional Technology Day (May 11), advised scientific institutions to establish professionally-managed autonomous centres in the knowledge institutions such as IITs, NITs, etc. to take the intended goal forward.

"This initiative is an excellent one by the DST. It will help students and young re-

searchers to make use of these facilities which otherwise are not accessible to them. National labs accumulate these facilities but are not fully utilised. Therefore by opening up these facilities we help the research fraternity and justify huge investments," said Madhavan Rajeevan, former secretary, ministry of earth sciences.

A study by DST institution reveals that 94% of high-end research equipment used in India is imported while only 6% is manufactured indigenously.

It is expected that the new guidelines will enhance the quality of scientific output of the country and enable researchers in several lesser-known universities who cannot afford expensive RI, to contribute more meaningfully to the scientific ecosystem.